

19. How would increase the reaction rate by using phase transfer catalysis?
20. Discuss the Principle, Instrumentation and applications of micro wave induced green synthesis.
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NOVEMBER/DECEMBER 2024

**23PECH23B — GREEN CHEMISTRY**

Time : Three hours

Maximum : 75 marks

SECTION A — (10 × 2 = 20 marks)

Answer ALL questions.

1. What is green chemistry?
2. What is the role of green chemistry in the modern industrial process?
3. How does green chemistry affect everyday life?
4. What is the difference between traditional and green chemistry?
5. What are the main sources of primary and secondary pollutants?
6. What are the effects of air pollutants on human beings?
7. What is meant by esterification? Give example.
8. What are crown ethers?



9. Define sonochemistry and give its principle.
10. Explain the cavitation theory in sonochemistry.

SECTION B — ( $5 \times 5 = 25$  marks)

Answer ALL questions.

11. (a) Discuss the economic and environmental advantages of green chemistry techniques.

Or

- (b) Explain the goals of green chemistry and why they are important to environmental sustainability.

12. (a) Write down the green chemistry's sustainability principles.

Or

- (b) Describe the green synthesis of catechol.

13. (a) Discuss about poly supported photosensitizers.

Or

- (b) What is the role of polymeric superacid catalysts in green chemistry?

14. (a) What is the difference between saponification and esterification?

Or

- (b) Explain the usage of phase transfer catalysts in the elimination process.

15. (a) Explain the apparatus used in sonochemical synthesis.

Or

- (b) What is the application of ultrasound-assisted synthesis in material science?

SECTION C — ( $3 \times 10 = 30$  marks)

Answer any THREE questions.

16. Give the twelve green chemistry principles and how they individually contribute to chemical industry sustainability.
17. Discuss the benefits and limitations of using supercritical  $\text{CO}_2$  in the synthesis of organic materials.
18. Explain how polymer-supported catalysts improve the efficiency and selectivity of chemical processes.